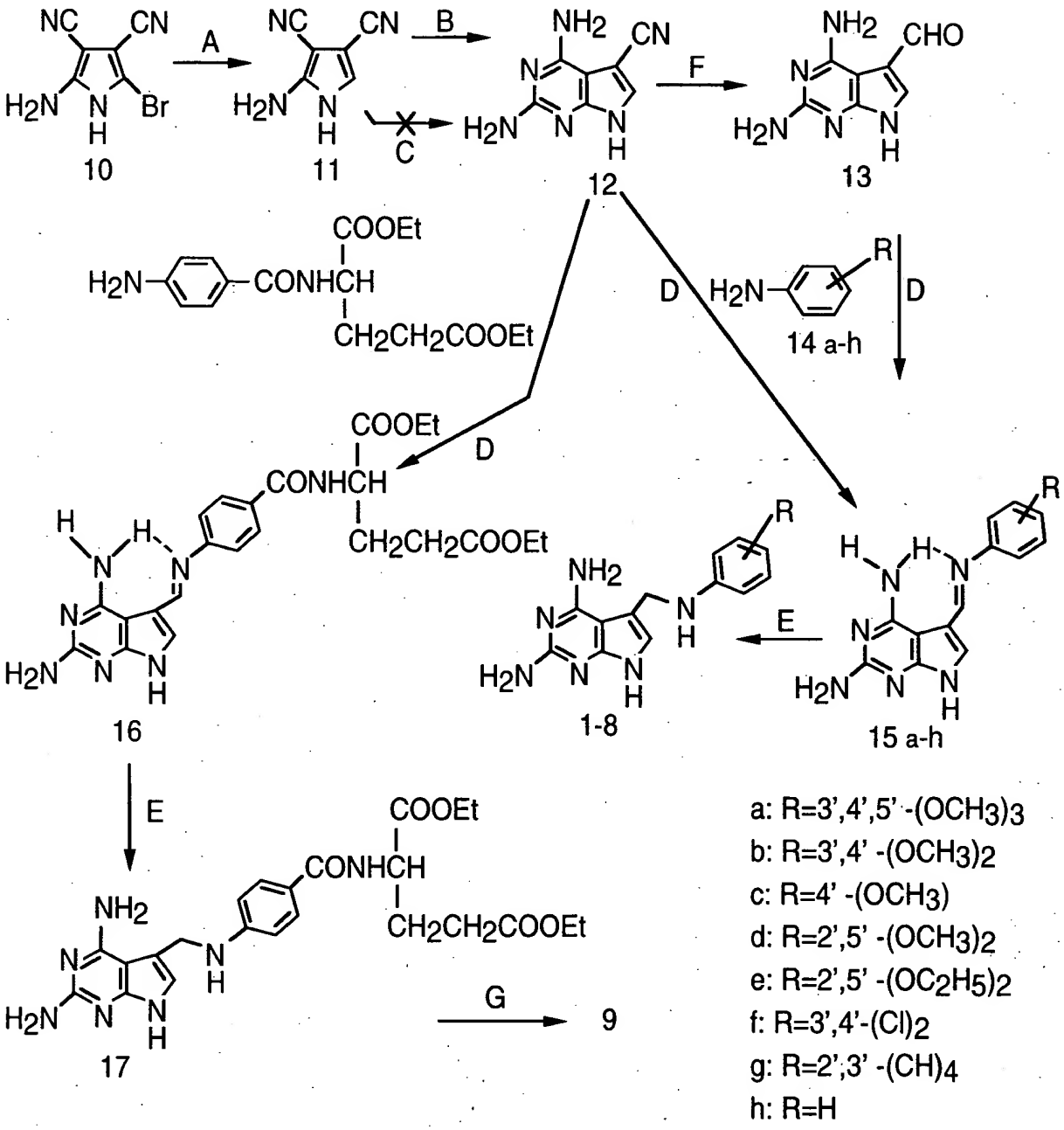
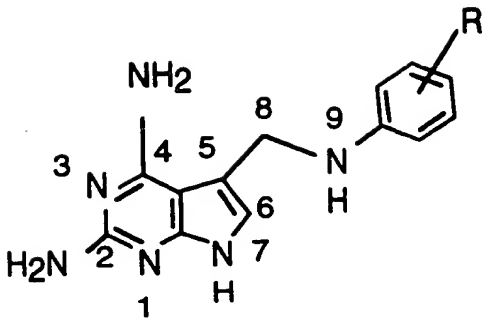


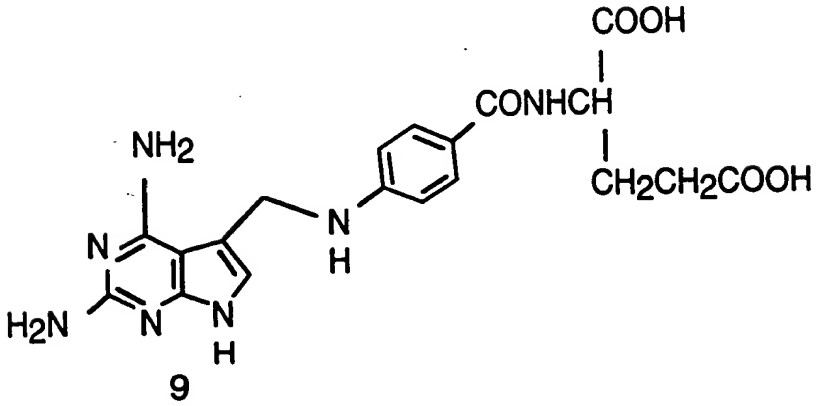
a: R=3',4',5' -$(OCH_3)_3$
b: R=3',4' -$(OCH_3)_2$
c: R=4' -(OCH_3)
d: R=2',5' -$(OCH_3)_2$
e: R=2',5' -$(OC_2H_5)_2$
f: R=3',4'-$(Cl)_2$
g: R=2',3' -$(CH)_4$
h: R=H

(A) Pd-$BaCO_3$/DMF/MeOH; (B) chlorformamidine/Dowtherm-A; (C) guanidine HCl/NaOEt/Δ; (D) Raney Ni/80% AcOH/MeOH; (E) $NaCNBH_3$/MeOH/AcOH; (F) HCOOH/Raney Ni;Δ; (G) 1 N NaOH/MeOH/rt.

FIG. 1



1: R=3',4',5' -$(OCH_3)_3$
2: R=3',4' -$(OCH_3)_2$
3: R=4' -(OCH_3)
4: R=2',5' -$(OCH_3)_2$
5: R=2',5' -$(OC_2H_5)_2$
6: R=3',4'-$(Cl)_2$
7: R=2',3' -$(CH)_4$
8: R=H



9

FIG. 2

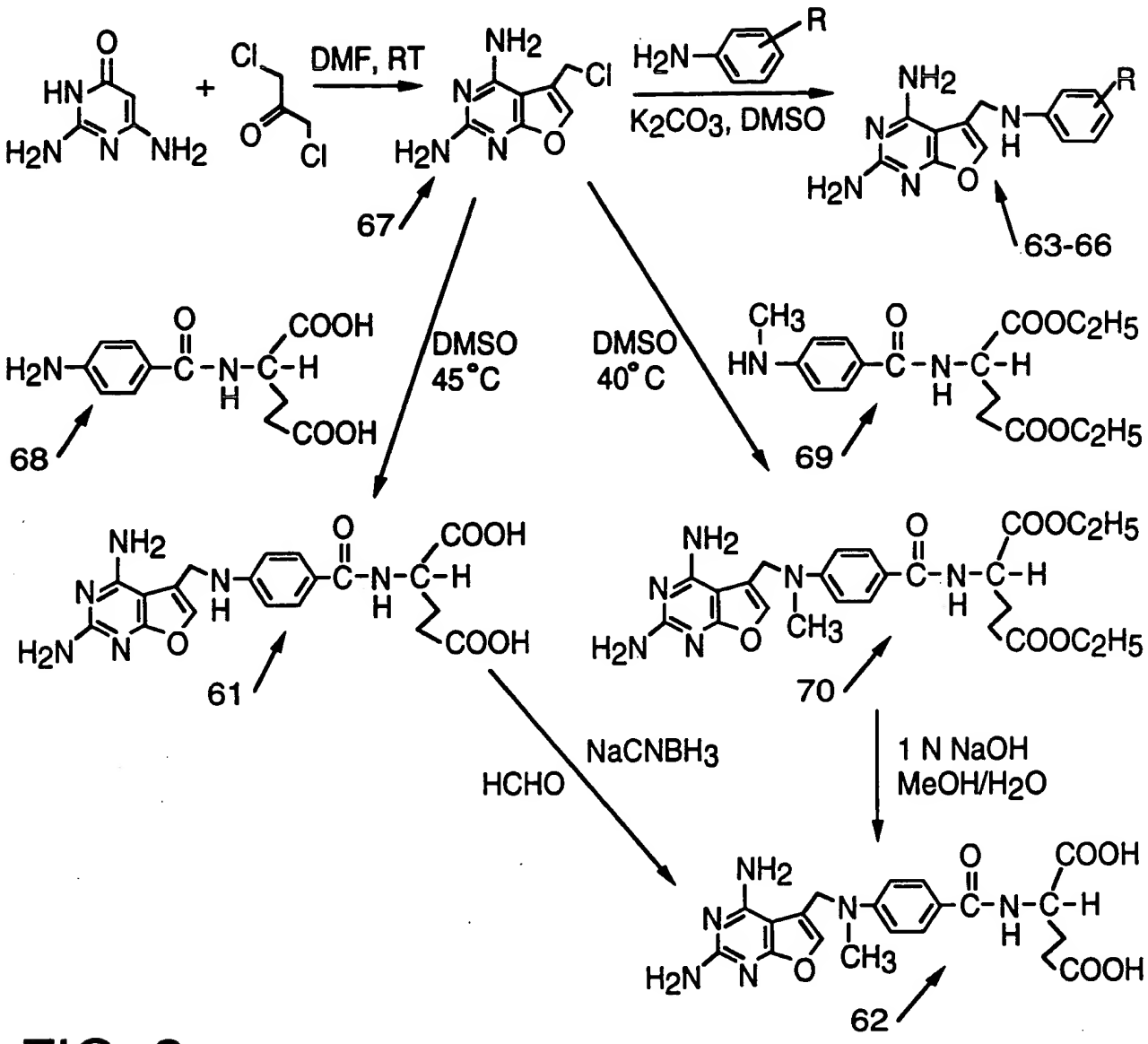


FIG. 3

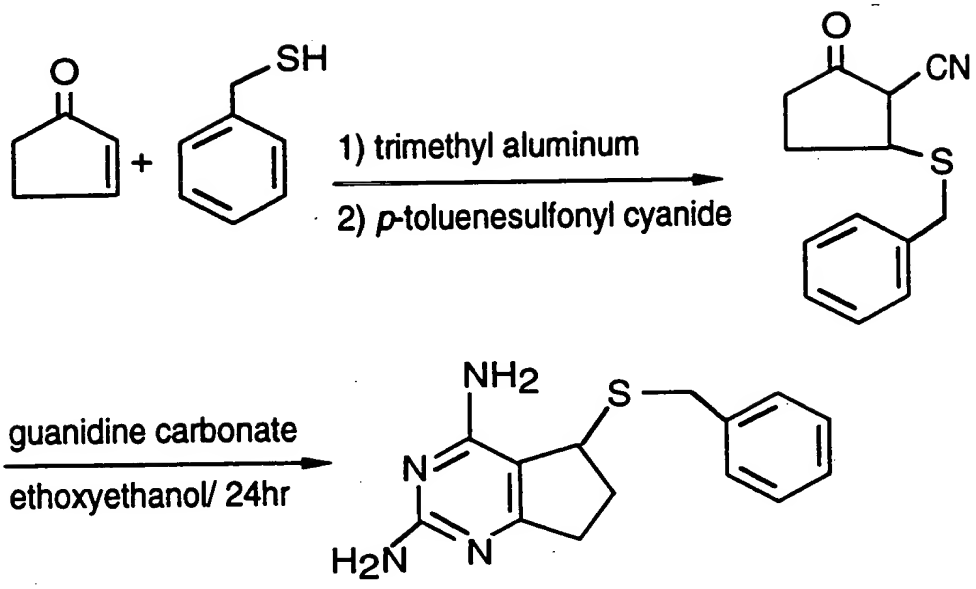


FIG. 4

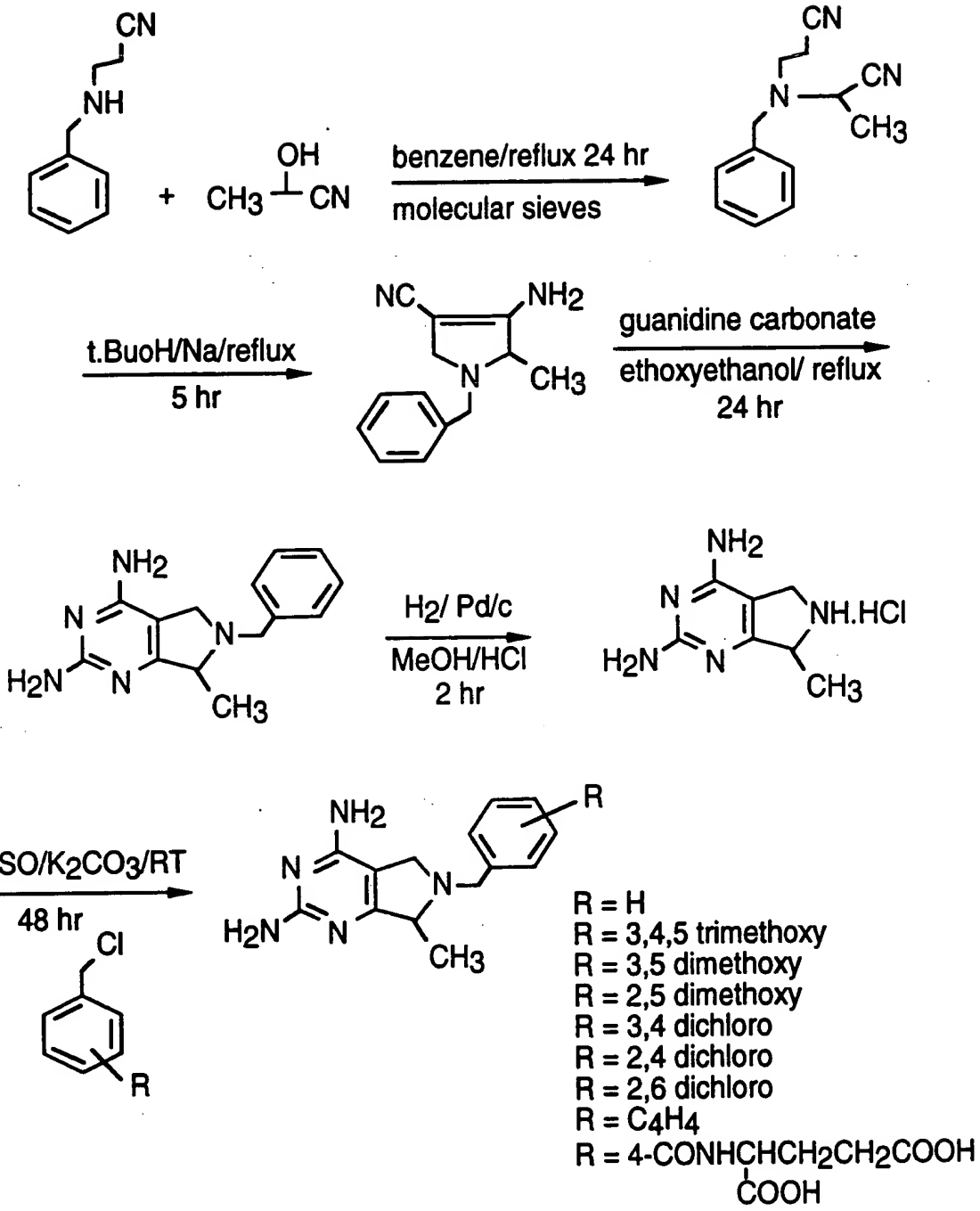


FIG. 5

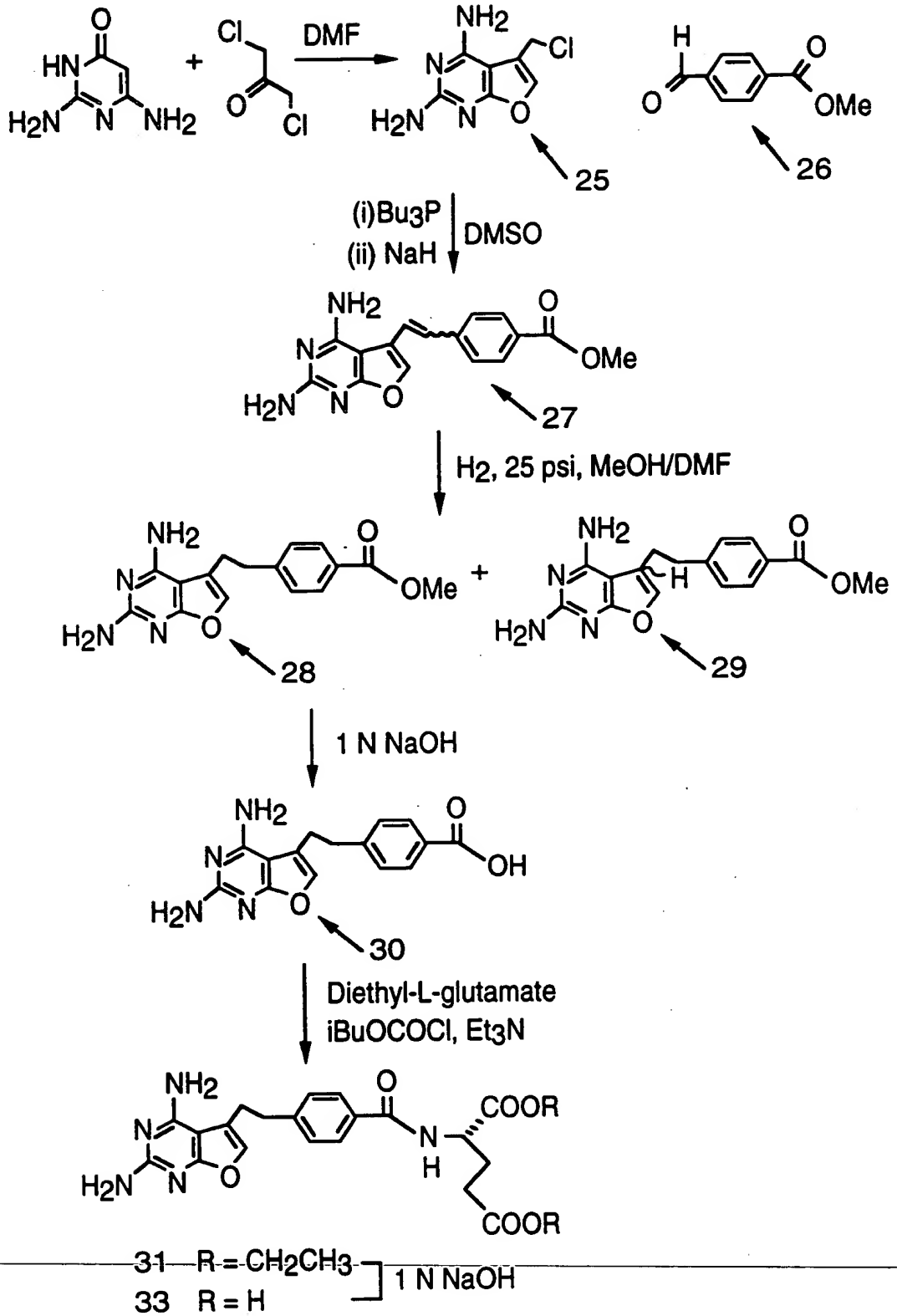


FIG. 6

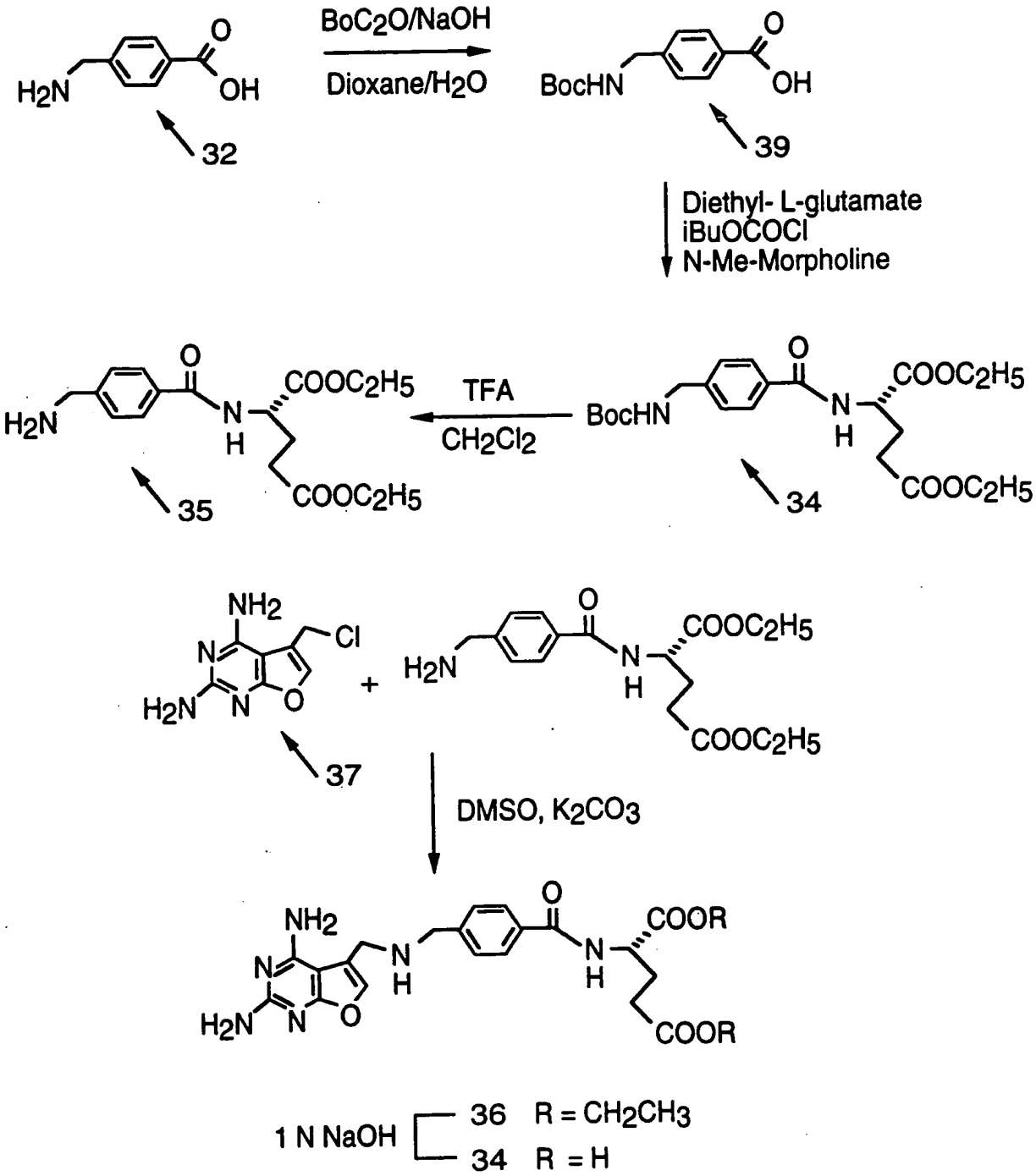
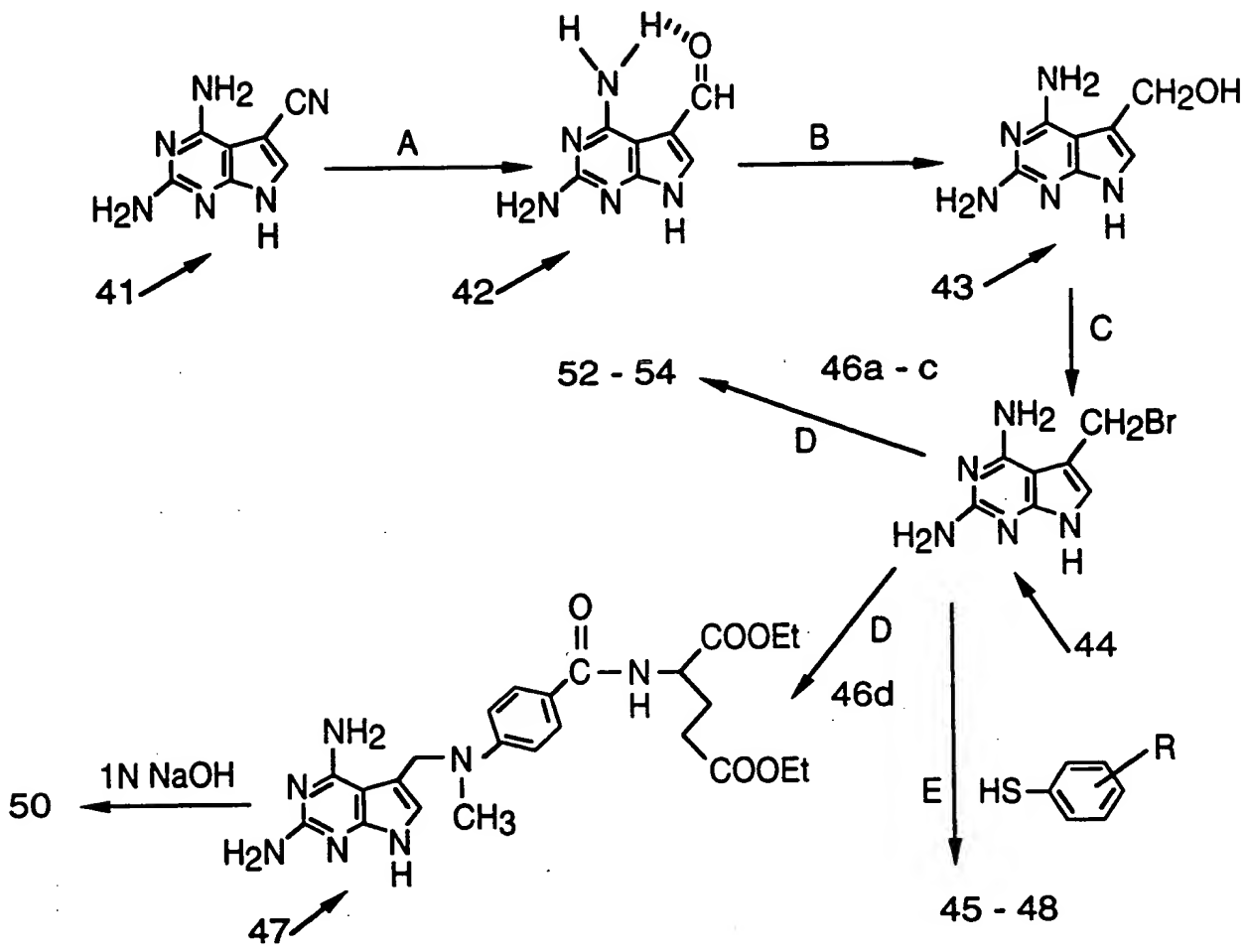
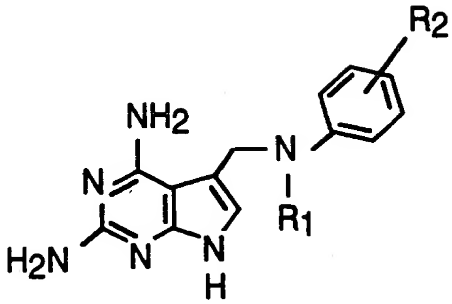


FIG. 7



(A): Raney Ni/HCOOH; (B): $NaBH_3$; (C): 30% HBr-AcOH; (D): DMF; (E): NaH/DMF

FIG. 8



51

R_1 = H: R_2 =

51a : 2', 5' - $(OCH_3)_2$

51b : 3', 4' - $(Cl)_2$

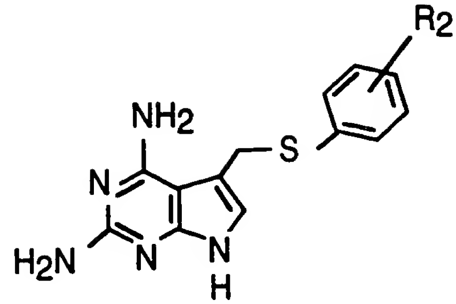
51c : 2', 3' - $(CH)_4$

R_1 = CH_3: R_2 =

52 : 2', 5' - $(OCH_3)_2$

53 : 3', 4' - $(Cl)_2$

54 : 2', 3' - $(CH)_4$



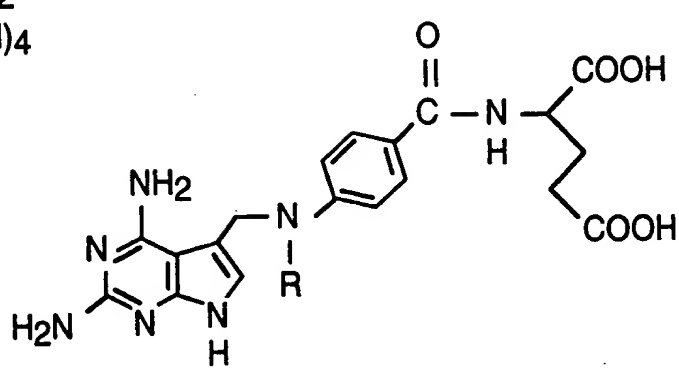
R =

55 : 3', 4' - $(OCH_3)_2$

56 : 3', 4' - $(Cl)_2$

57 : 2', 3' - $(CH)_4$

58 : 3', 4' - $(CH)_4$



R =

59 : H

60 : CH_3

FIG. 9

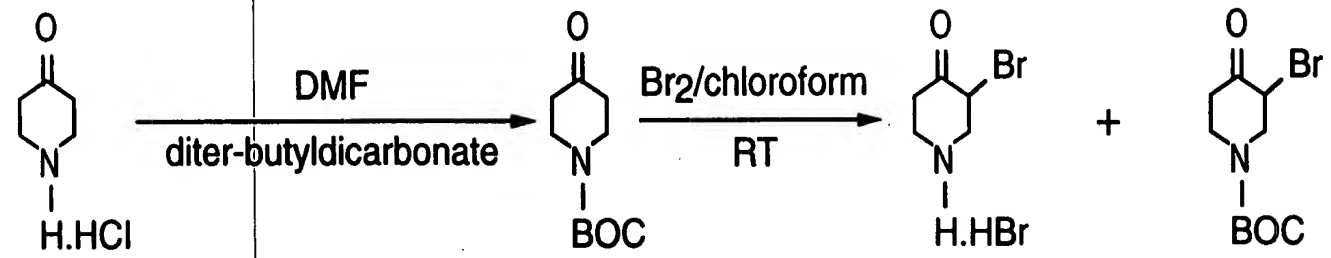


FIG. 10a FIG. 10b FIG. 10c FIG. 10d

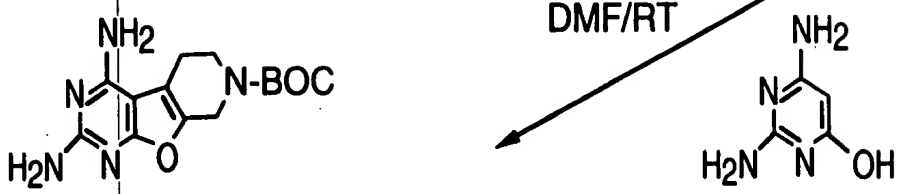


FIG. 10e

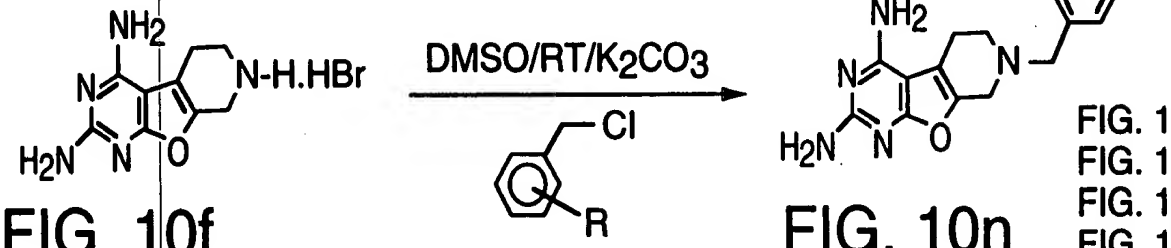


FIG. 10f FIG. 10n

FIG. 10g R=H
FIG. 10h R=3,4,5 trimethoxy
FIG. 10i R=3,5 dimethoxy
FIG. 10j R=2,4 dichloro
FIG. 10k R=3,4 dichloro
FIG. 10l R=2,6 dichloro
FIG. 10m R=-CONHCH2CH2COOH
COOH

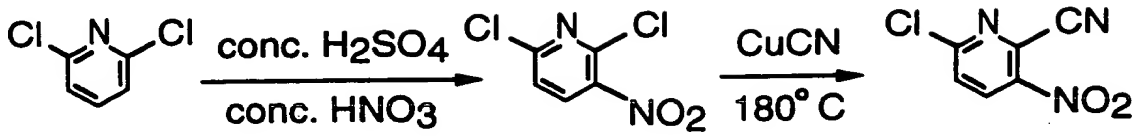
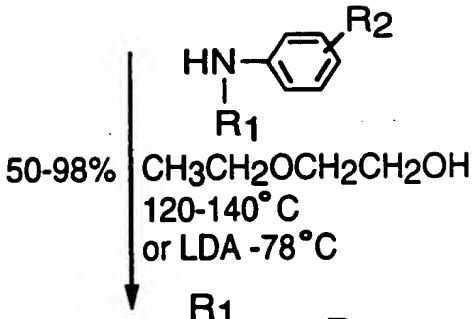


FIG. 11a



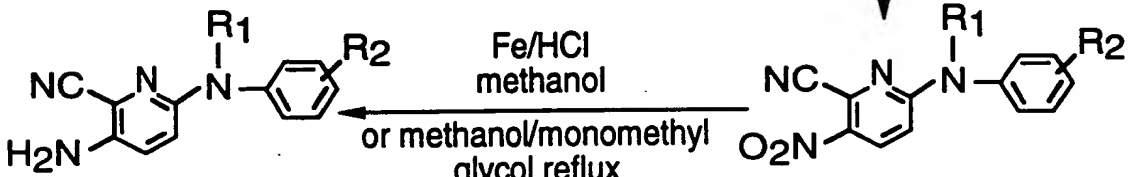


FIG. 11c

FIG. 11b

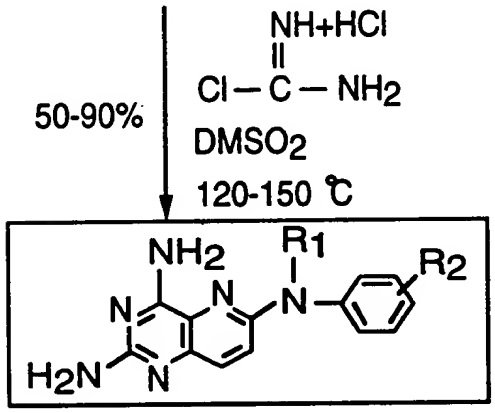


FIG. 11d

R_1 = H, R_2 = 3',4'-diOMe
R_1 = H, R_2 = H
R_1 = H, R_2 = 2',5'-diOMe
R_1 = H, R_2 = 4'-Cl
R_1 = H, R_2 = 2'-OMe
R_1 = H, R_2 = 4'-OMe
R_1 = H, R_2 = 3',4',5'-triOMe
R_1 = CH_3, R_2 = 3',4',5'-triOMe
R_1 = CH_3, R_2 = 2',5'-diOMe
R_1 = CH_3, R_2 = 3',4'-diOMe
R_1 = CH_3, R_2 = 3',4',5'-triOMe
R_1 = CH_3, R_2 = H
R_1 = H, R_2 = 3',4'-C_4H_4
R_1 = CH_3, R_2 = 3',4'-C_4H_4
R_1 = CH_3, R_2 = 2',3'-C_4H_4

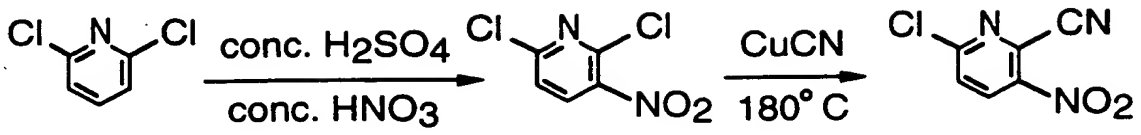


FIG. 12a

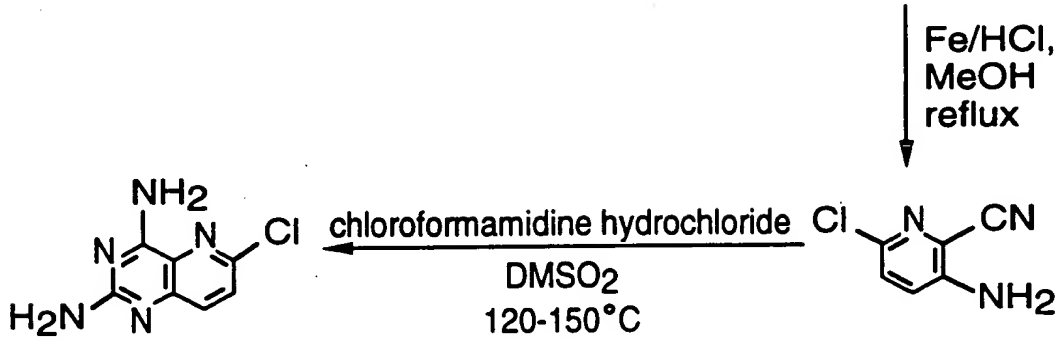


FIG. 12c

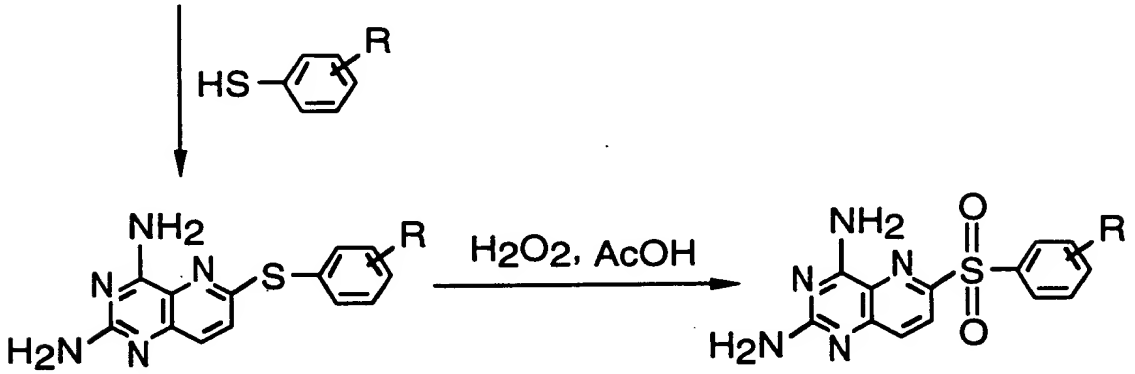


FIG. 12d

FIG. 12e

FIG. 12f R=4'-OMe
FIG. 12g R=3',4'-OMe
FIG. 12h R=2'-OMe

FIG. 12i R=4'-OMe
FIG. 12j R=3',4'-OMe
FIG. 12k R=2'-OMe

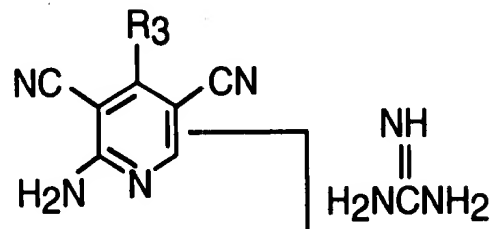


FIG. 13a

FIG. 13b

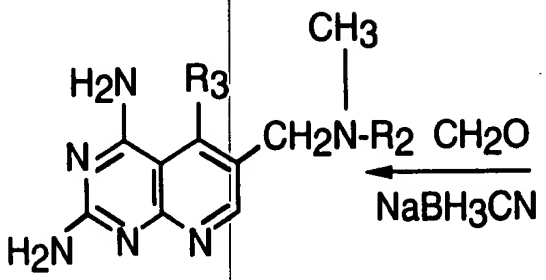


FIG. 13e

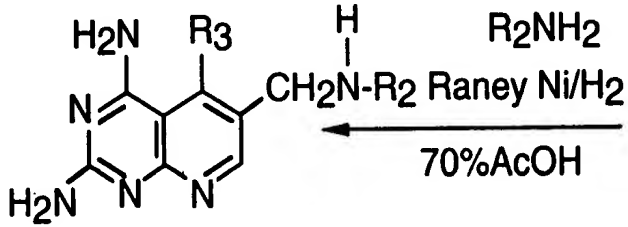


FIG. 13d

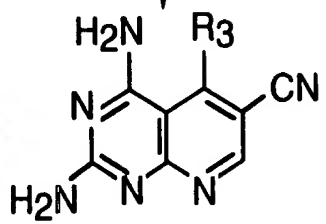


FIG. 13c

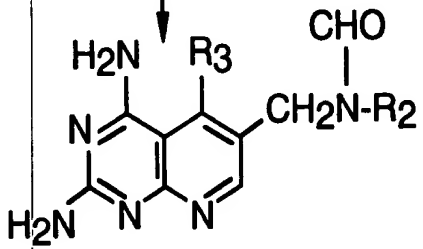


FIG. 13f

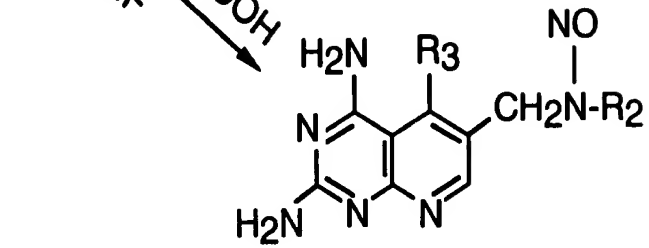


FIG. 13g

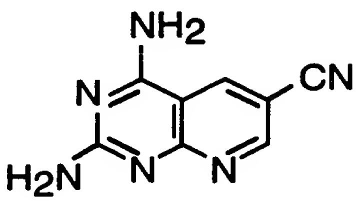


FIG. 14a

HCO_2H, Raney Ni

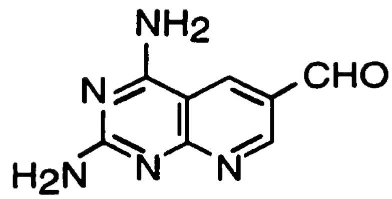


FIG. 14b

$NaBH_4$, MeOH

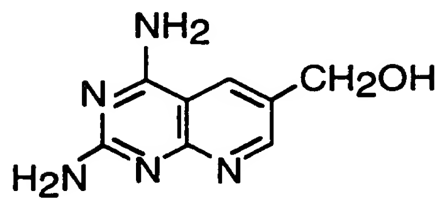


FIG. 14c

HBr gas, dioxane

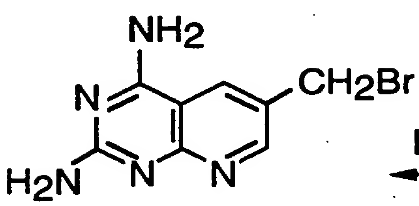


FIG. 14d

HS-R, DMAC, K_2CO_3 or $NaCO_3$

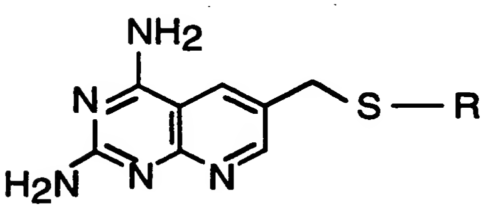


FIG. 14e R = Phenyl

FIG. 14f R = Napthylene

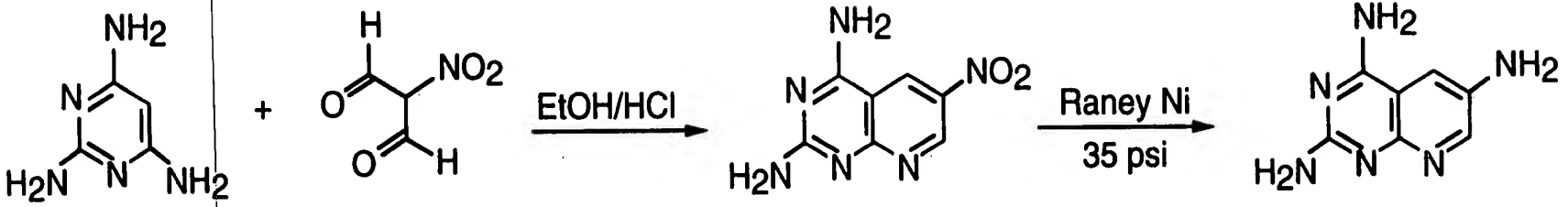


FIG. 15a

FIG. 15b

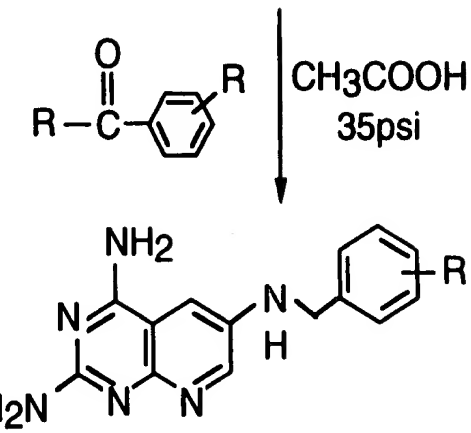


FIG. 15c

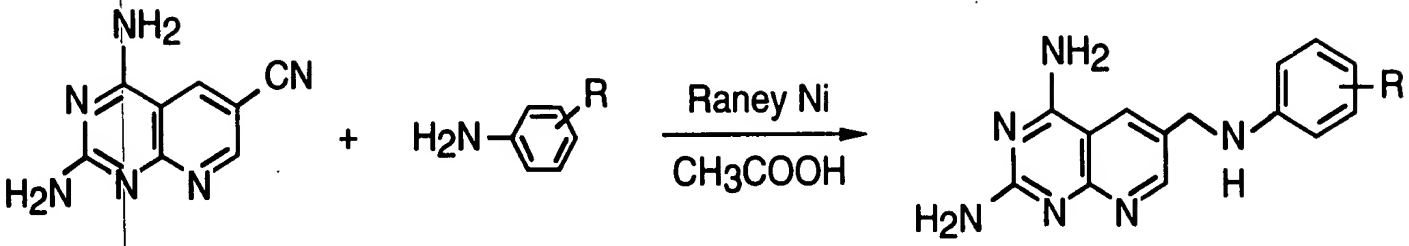
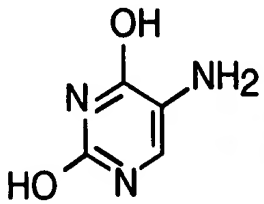


FIG. 16a FIG. 16b FIG. 16c



$CH_3CH{=}CHCHO$, 20% HCl

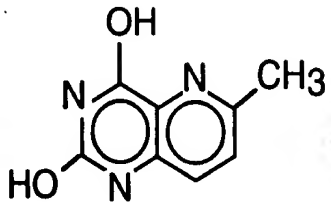


FIG. 17a

i. MCPBA, AcOH
ii. Ac_2O

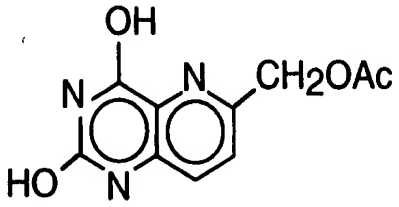


FIG. 17b

$POCl_3$
NEt_3

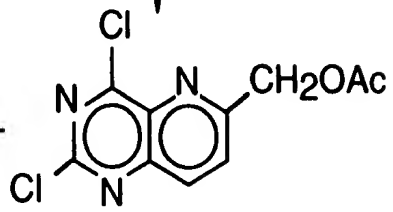


FIG. 17c

NH_3
150-160°C

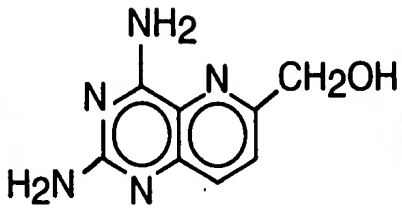


FIG. 17d

PBr_3, THF

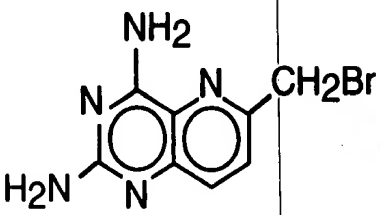


FIG. 17e

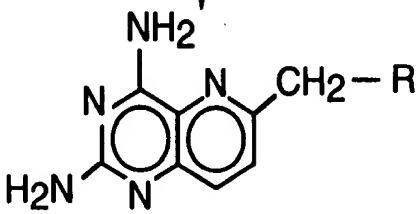


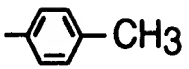
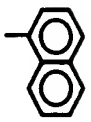
FIG. 17f R= —NH—  —CH_3

FIG. 17g R= — S— 

FIG. 17h R= — HN— 

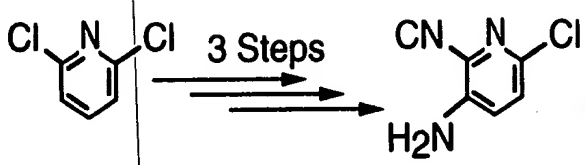
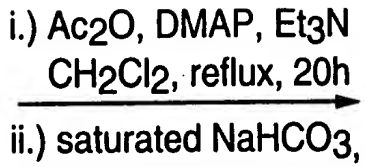


FIG. 18a



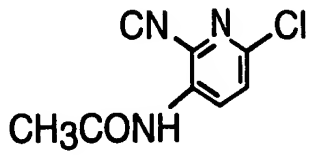


FIG. 18b

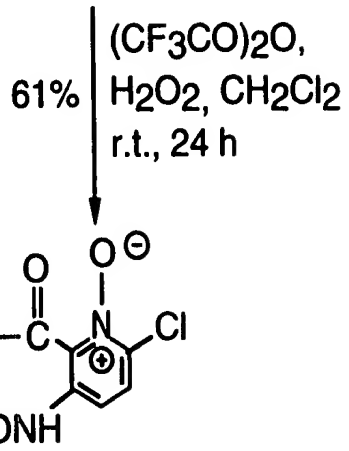
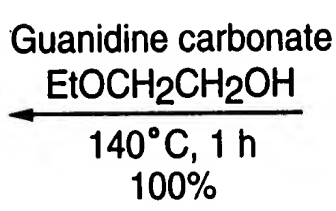


FIG. 18c



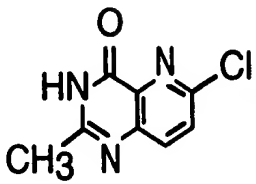


FIG. 18d

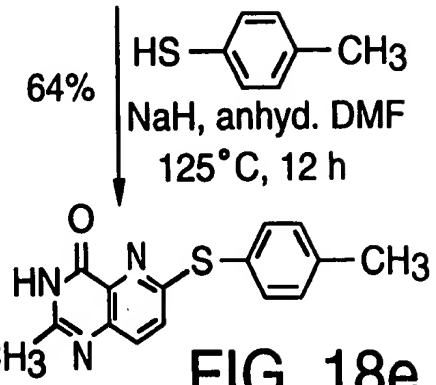


FIG. 18e

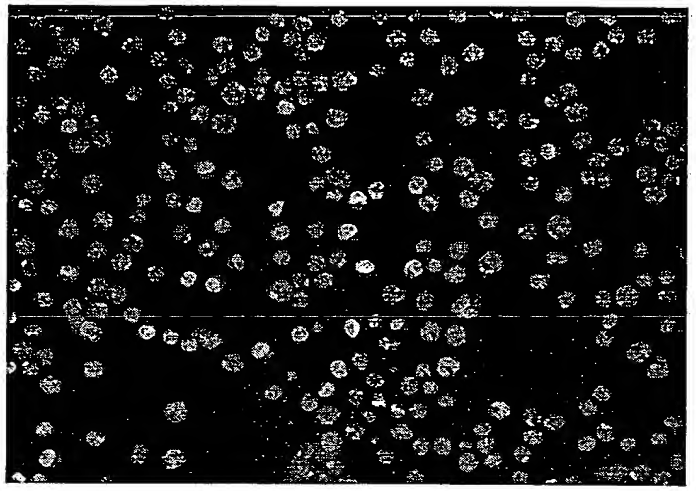


Fig. 1A

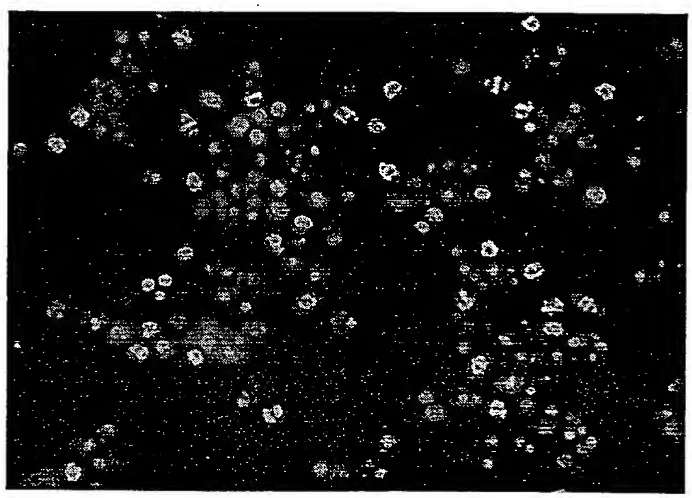


Fig. 1B

Fig. 2

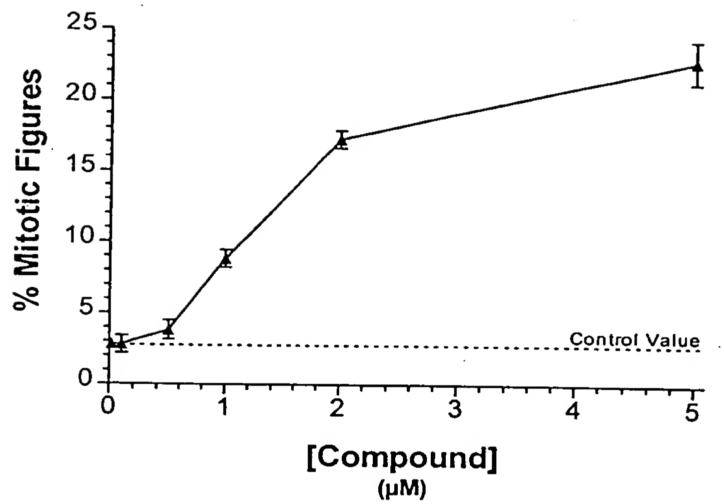
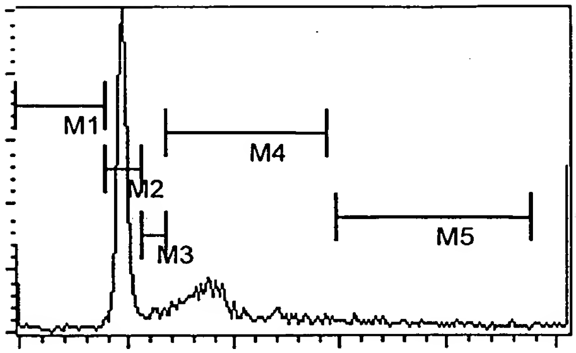
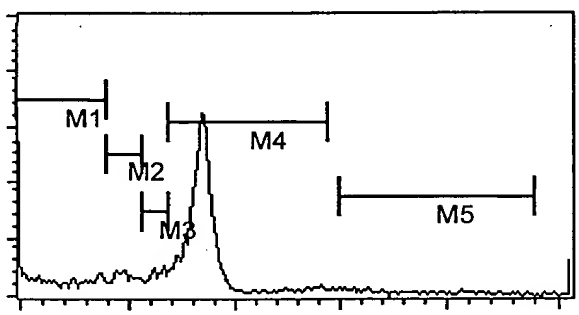


Fig. 3A



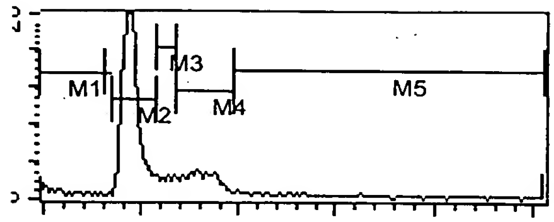
Marker	%
Al	100.0
M1	2.6
M2	42.4
M3	3.8
M4	34.8
M5	9.8

Fig. 3B



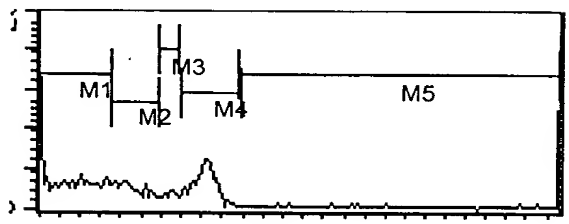
Marker	%
All	100.0
M1	25.1
M2	7.4
M3	5.3
M4	57.2
M5	3.8

Fig. 4A



Marker	%
All	100.0
M1	3.3
M2	68.4
M3	6.1
M4	16.5
M5	5.5

Fig. 4B



Marke	%
Al	100.0
M1	56.1
M2	13.7
M3	4.3
M4	18.5
M5	7.3

Fig. 5